

700 Series

# Burst Control & Pressure Reducing Valve Excessive Flow

#### Model 792-U

- "Older" burst susceptible networks
- Vulnerable network infrastructure facilities
- Networks at risk of mechanical damage
- Flow and leakage reduction
- System maintenance savings

The Model 792-U Burst Control & Pressure Reducing Valve is a hydraulically operated, diaphragm actuated control valve with two independent functions. When flow is below setting, it reduces higher upstream pressure to lower pre-set downstream pressure, regardless of varying demand or upstream pressure. Upon sensing flow in excess of setting, it shuts off drip tight and locks (until it is manually reset).



#### Features and Benefits

- Line pressure driven Independent operation
- Hydraulic flow sensor (upstream installation)
  - No moving parts
  - □ No electronic components
  - No need for flow straighten
- Sensitive hydraulic pilot Tight setting window
- In line serviceable Easy maintenance
- Double chamber design
  - Moderated valve reaction
  - Protected diaphragm
- "Y" or angle, wide body Minimized pressure loss
- Obstacle free, full bore Uncompromising reliability
- Stainless Steel raised seat Cavitation damage resistant
- Semi-straight flow Non-turbulent flow
- V-Port Throttling Plug Low flow stability

#### Major Additional Features

- Solenoid control 792-55-U
- Electric override **792-59-U**
- Downstream over-pressure guard 792-48-U
- Electronic multi-level setting, Type 4T **792-4T-U**

See relevant BERMAD publications.





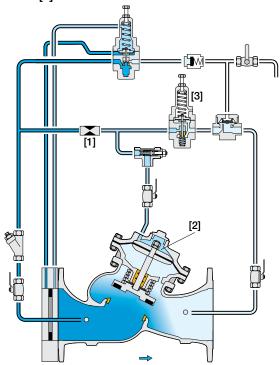
Model 792-U 700 Series

## **Operation**

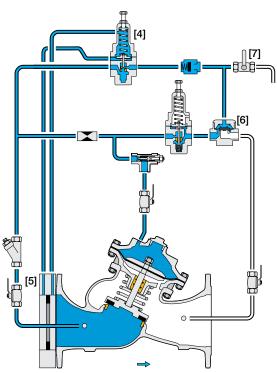
The Model 792-U is a pilot controlled valve equipped with an Orifice assembly, a Hydraulic Relay Valve (HRV) and two adjustable 2-Way pilots.

The restriction [1] continuously allows flow from the valve inlet into the upper control chamber [2]. The Pressure Reducing Pilot [3] senses downstream pressure. Should this pressure rise above pilot setting, the pilot throttles and causes the pressure in the upper control chamber to accumulate. This causes the main valve to throttle closed decreasing downstream pressure to pilot setting.

The Differential Pressure Sustaining Pilot [4] senses the differential pressure across the orifice plate [5]. Should this differential pressure rise above pilot setting the pilot opens closing the HRV [6]. Thus causing the main valve to begin an irreversible "close & lock" process. Opening and resetting the main valve requires manual intervention by means of the manual reset valve [7].



Valve Reduces Pressure (normal flow)



Valve Closed & Locked

#### Pilot System Specifications

#### **Standard Materials:**

#### Pilots:

Body: Stainless Steel 316 or Bronze Elastomers: Synthetic Rubber

Springs: Galvanized Steel or Stainless Steel

#### **Tubing & Fittings:**

Stainless Steel 316 or Copper & Brass

#### Accessories:

Stainless Steel 316, Brass and Synthetic

Rubber Elastomers

#### Orifice Assembly

Body: Fusion Bonded Epoxy Steel or Stainless Steel

Orifice Plate: Stainless Steel

#### Pressure Reducing Pilot Adjustment Range:

0.5 to 3.0 bar; 7 to 40 psi 0.8 to 6.5 bar; 11 to 95 psi 1 to 16 bar; 15 to 230 psi 5 to 25 bar; 70 to 360 psi

#### Notes:

- Burst flow settings shuold be at least 25% higher than the maximum allowed system flow
- Orifice diameter is calculated for each valve.
- The orifice additional head loss is 0.2 bar; 2.8 psi
- Orifice assembly adds 25mm; 1" to valve length
- Recommended continuous flow velocity: 0.3-6.0 m/sec; 1-20 ft/sec
- Minimum operating pressure: 0.7 bar; 10 psi.
   For lower pressure requirements consult factory
- Inlet pressure, outlet pressure and flow rate are required for optimal sizing and cavitation analysis



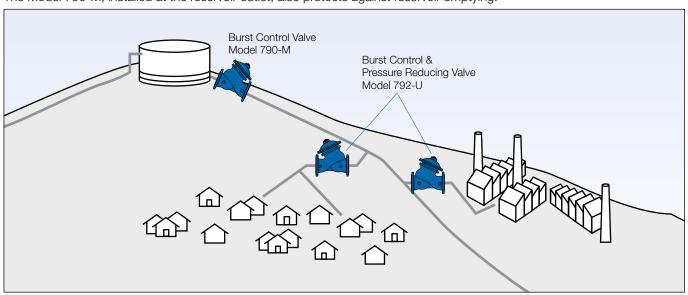


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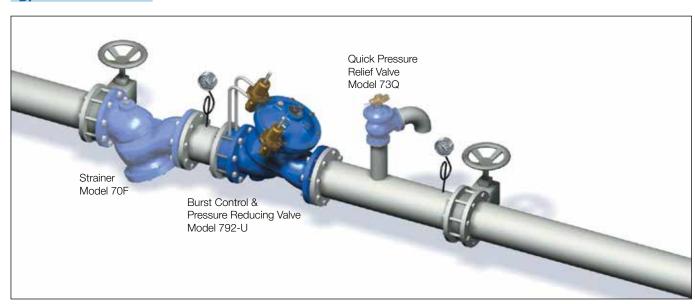
## **Typical Applications**

#### Burst Control Valves in a Network

Every water system is vulnerable to bursts, whether due to system problems or external mechanical damage. This illustration shows a reservoir feeding a downhill line with lower elevation consumers. Each Model 792-U protects the lower elevation consumers. It reduces their supply pressure and, in case of burst, "closes & locks," preventing flooding. The Model 790-M, installed at the reservoir outlet, also protects against reservoir emptying.



## **Typical Installation**







700 Series

#### **Technical Data**

Size Range: DN40-900; 11/2-36" End Connections (Pressure Ratings):

Flanged: ISO PN16, PN25 (ANSI Class 150, 300)

Threaded: BSP or NPT Others: Available on request

Valve Patterns: "Y" (globe) & angle, globe (DN600-900; 24"-36")

Working Temperature: Water up to 80°C; 180°F

**Standard Materials:** 

Body & Actuator: Ductile Iron

Internals: Stainless Steel, Bronze & coated Steel Diaphragm: Synthetic Rubber Nylon fabric-reinforced

Seals: Synthetic Rubber

h (mm / inch)

H (mm / inch)

Weight (Kg/lb)

L (mm / inch)

W (mm / inch)

R (mm / inch)

h (mm / inch)

H (mm / inch)

Weight (Kg/lb)

Coating: Fusion Bonded Epoxy, RAL 5005 (Blue) approved for drinking water or Electrostatic Polyester Powder

### Differential Pressure Calculation

$$\Delta P = \left(\frac{Q}{(Kv;Cv)}\right)^2$$

 $\Delta P$  = Differential Pressure for fully open valve (bar; psi)

Q = Flow rate (m<sup>3</sup>/h; gpm)

**Kv** = Metric system - valve flow coefficient (flow in m³/h at 1 bar ΔP with 15°C water)

Cv = US system - Valve flow coefficient (flow in gpm at 1 psi ΔP with 60°F water) Cv = 1.155 Kv

#### Flow Data & Dimensions Table

		DN / Size	40	1.5"	50	2"	65	2.5"	80	3"	100	4"	150	6"	200	8"	250	10"	300	12"	350	14"	400	16"	450	18"	500	20"
Data	ES ES	Kv / Cv - Flat	54	62	57	66	60	69	65	75	145	167	395	456	610	705	905	1,045	1,520	1,756	-	-	2,250	2,599	-	-	4,070	4,701
	700ES	Kv / Cv - V-Port	46	53	48	56	51	59	55	64	123	142	336	388	519	599	769	888	1,292	1,492	-	-	1,913	2,209	-	-	3,460	3,996
Flow	700 & 700 EN	Kv / Cv - "Y" Flat	42	49	50	58	55	64	115	133	200	230	460	530	815	940	1,250	1,440	1,850	2,140	1,990	2,300	3,310	3,820	3,430	3,960	3,550	4,100
	007	Kv / Cv - "Y" V-Port	36	41	43	49	47	54	98	113	170	200	391	450	693	800	1,063	1,230	1,573	1,820	1,692	1,950	2,814	3,250	2,916	3,370	3,018	3,490
700-ES		L (mm / inch)	230	9.1	230	9.1	290	11.4	310	12.2	350	13.8	480	18.9	600	23.6	730	28.7	850	33.5	-	-	1,100	43.3	-	-	1,250	49.2
	25	W (mm / inch)	150	5.9	165	6.5	185	7.3	200	7.9	235	9.3	300	11.8	360	14.2	425	16.7	530	20.9	-	-	626	24.6	-	-	838	33
	/00-E	h (mm / inch)	80	3.1	90	3.5	100	3.9	105	4.1	125	4.9	155	6.1	190	7.5	220	8.7	250	9.8	-	-	320	12.6	-	-	385	15.2
	\ £	H (mm / inch)	240	9.4	250	9.8	250	9.8	260	10.2	320	12.6	420	16.5	510	20.1	605	23.8	725	28.5	-	-	895	35.2	-	-		46.7
		Weight (Kg/lb)	10	22	10.8	23.8	13.2	29	15	33	26	57.2	55	121	95	209	148	326	255	561	-	-	437	960	-	-	1,061	2,334
700-EN		L (mm / inch)	-	-	-	-	-	-	310	12.2	350	13.8	480	18.9	600	23.6	730	28.7	850	33.5	-	-	-	-	-	-	-	-
	25	W (mm / inch)	-	-	-	-	-	-	200	7.9	235	9.3	320	12.6	390	15.4	480	18.9	550	21.7	-	-	-	-	-	-	-	-
	PN16;	h (mm / inch)	-	-	-	-	-	-	100	3.9	118	4.6	150	5.9	180	7.1	213	8.4	243	9.6	-	-	-	-	-	-	-	-
	<b>4</b>	H (mm / inch)	-	-	-	-	-	-	305	12	369	14.5	500	19.7	592	23.3	733	28.9	841	33.1	-	-	-	-	-	-	-	-
		Weight (Kg/lb)	-	-	-	-	-	-	21	46.2	31	68.2	70	154	115	253	198	436	337	741	-	-	-	-	-	-	-	-
) Flanged		L (mm / inch)	205	8.1	210	8.3	222	8.7	250	9.8	320	12.6	415	16.3	500	19.7	605	23.8	725	28.5	733	28.9	990	39	1,000	39.4	1,100	43.3
	N16 150	W (mm / inch)	155	6.1	165	6.5	178	7	200	7.9	223	8.8	320	12.6	390	15.4	480	18.9	550	21.7	550	21.7	740	29.1	740	29.1	740	29.1
	L S	h (mm / inch)	78	3.1	83	3.3	95	3.7	100	3.9	115	4.5	143	5.6	172	6.8	204	8	242	9.5	268	10.6	300	11.8	319	12.6	358	14.1
	말문망	H (mm / inch)	239	9.4	244	9.6	257	10.1	305	12	366	14.4	492	19.4	584	23	724	28.5	840	33.1	866	34.1	1,108	43.6	1,127	44.4	1,167	45.9
	g 	Weight (Kg/lb)	9.1	20	10.6	23	13	29	22	49	37	82	75	165	125	276	217	478	370	816	381	840	846	1,865	945	2,083	962	2,121
		L (mm / inch)	205	8.1	210	8.3	222	8.7	264	10.4	335	13.2	433	17	524	20.6	637	25.1	762	30	767	30.2	1,024	40.3	1,030	40.6	1,136	44.7
í	PN25	W (mm / inch)	155	6.1	165	6.5	185	7.3	207	8.1	250	9.8	320	12.6	390	15.4	480	18.9	550	21.7	570	22.4	740	29.1	740	29.1	750	29.5
	F SS	h (mm / inch)	78	3.1	83	3.3	95	3.7	105	4.1	127	5	159	6.3	191	7.5	223	8.8	261	10.3	295	11.6	325	12.8	357	14.1	389	15.3
	Clas	H (mm / inch)	239	9.4	244	9.6	257	10.1	314	12.4	378	14.9	508	20	602	23.7	742	29.2	859	33.8	893	35.2	1,133	44.6	1,165	45.9	1,197	47.1
		Weight (Kg/lb)	10	22	12.2	27	15	33	25	55	43	95	85	187	146	322	245	540	410	904	434	957	900	1984	967	2,132	986	2,174
	300	L (mm / inch)	155	6.1	155	6.1	212	8.3	250	9.8																		
	16;0	W (mm / inch)	122	4.8	122	4.8	122	4.8	163	6.4	l <b>∓</b>			9						S	PEC	:ify	wt	ıen	OL	d∈r	pnir	<b>]</b> :

		DN / Size	600	24"	700	28"	750	30"	800	32"	900	36"	
	9	L (mm / inch)	1,450	57.1	1,650	65	1,750	68.9	1,850	72.8	1,850	72.8	
	PN1 150	W (mm / inch)	1,250	49.2	1,250	49.2	1,250	49.2	1,250	49.2	1,250	49.2	
	46	h (mm / inch)	470	18.5	490	19.3	520	20.5	553	21.8	600	23.6	
	Globe Class	H (mm / inch)	1,965	77.4	1,985	78.1	2,015	79.3	2,048	80.6	2,095	82.5	
		Weight (Kg/lb)	3,250	7,150	3,700	8,140	3,900	8,580	4,100	9,020	4,250	9,350	
	ις.	L (mm / inch)	1,500	59.1	1,650	65	1,750	68.9	1,850	72.8	1,850	72.8	
	PN25	W (mm / inch)	1,250	49.2	1,250	49.2	1,250	49.2	1,250	49.2	1,250	49.2	
	46	h (mm / inch)	470	18.5	490	19.3	520	20.5	553	21.8	600	23.6	
	Globe Class	H (mm / inch)	1,965	77.4	1,985	78.1	2,015	79.3	2,048	80.6	2,095	82.5	
	O	Weight (Kg/lb)	3,500	7,700	3,700	8,140	3,900	8,580	4,100	9,020	4,250	9.370	

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122

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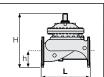
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## Specify when ordering:

- Size
- Main model
- Additional features
- Pattern
- Body material
- End connection
- Coating
- Voltage & main valve position
- Tubing & Fittings materials
- Operational data (according to model)
- Pressure data
- Flow data
- Reservoir level data
- Settings
- Use Bermad's Waterworks Ordering Guide

